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ABSTRACT

The research reported on here is a collection and summary of information concerning the distribution of pupils in various special educational programs, the number of pupils qualified for, but not enrolled in, special educational programs, and the distribution of pupils in the regular educational program. Per pupil costs were computed for students enrolled in the regular program at the elementary and secondary levels in each district in the State. Statewide averages of thses costs were then computed. Per pupil costs were also computed on a district-by-district basis for vocational/technical programs and for the following handicapped programs: educable mentally retarded, trainable mentally retarded, orthopedically handicapped, blind or partially sighted, deaf or partially deaf, socially and emotionally maladjusted, and learning disabilities. Statewide average costs for these programs were computed and a cost index developed to compare the relative cost of special programs to that of the regular program. The document also considers the problems of allocating costs to specific educational programs and limitations in the use of cost indexes. (Author/DN)

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PROGRAMMATIC COST DIFFERENTIALS IN DELAWARE SCHOOL DISTRICTS

A Study Made by

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for

THE DELAWARE STATE BOARD OF EDUCATION

NATIONAL EDUCATIONAL FINANCE PROJECT

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PREFACE

This study is one of a number of state studies being made by the National Educational Finance Project. It was financed jointly by the Delaware State Board of Education and the National Educational Finance Project which is financed by a grant from the Department of Health, Education, and Welfare, United States Office of Education. The National Educational Finance Project made a national study of school finance during the period 1968-72. It is now in the process of disseminating its findings and assisting individual states in studying and planning improvements in their school finance program.

The Delaware study was coordinated by Roe L. Johns assisted by Kern Alexander and K. Forbis Jordan, all of whom are from the University of Florida and members of the central staff of the National Educational Finance Project. The following persons made special studies to supplement the research of the central staff.

State and Local Taxation - Rolland A. Bowers
University of Virginia

Cost of Delivering Education - Dewey Stollar
University of Tennessee

Public School Personnel - James Jones
Temple University
and
William B. Castetter
University of Pennsylvania

Financing School Construction - Monfort Barr
and
William Wilkerson
Indiana University

Pupil Transportation - Lloyd Frohreich
University of Wisconsin

School Food Service - William Castine
Florida A & M University

School District Productivity - Scott Rose
Pinellas County, Florida
Board of Education

Educational Need and Cost Differentials - Richard Rossmiller
University of Wisconsin

Robert Isaac of the Alaska State Department of Education and Philip Kelly of the South Carolina Department of Education, presently graduate fellows at the University of Florida, also assisted the central staff in making this study.

The survey staff requested state and local school officials for large amounts of statistical information, some of which had to be compiled for this study. We wish to express our appreciation for the complete cooperation given us by the Superintendent of Public Instruction, Dr. Kenneth C. Madden and his staff, and the local chief school officers and their associates.

Roe L. Johns
Kern Alexander
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Section 8

PROGRAMMATIC COST DIFFERENTIALS IN DELAWARE SCHOOL DISTRICTS

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Spending levels of school districts typically have been compared on the basis of per pupil expenditure. Educators have long been aware, however, that some educational programs are more costly than others. It is also evident that some school districts consistently spend substantially more money than other school districts to educate the same number of pupils. Despite the obvious differences in expenditure per pupil in various types of educational programs, only recently have studies been made to identify the magnitude and nature of the cost of educational programs which are tailored to meet the needs of specific types of pupils. The pioneering research of the National Educational Finance Project has focused attention upon the cost variations which are inherent in the educational programs offered by school districts.

The primary reason for the paucity of data on the relative cost of educational programs is the lack of data provided in most school fiscal accounting systems. School funds are typically accounted for on a district-wide basis, not on a school-by-school basis. The problem is further complicated by the fact that few school districts maintain their fiscal or personnel records on an educational program basis. Thus, until more detailed cost and staffing information are systematically gathered,

it will be difficult to justify the levels of funding needed to provide special programs designed to meet the needs of various types of pupils found in the public schools.

The primary purpose of this research was to gather and summarize information concerning the relative cost of educational programs designed for specific target groups of pupils in the public schools of Delaware. Information concerning the distribution of pupils in various special educational programs, the number of pupils qualified for but not enrolled in special educational programs, and the distribution of pupils in the regular educational program also was sought.

To initiate the study, a meeting was held in August, 1972, with members of the staff of the Delaware Department of Education to discuss the data which would be needed to develop program cost indices and to determine the availability of such data. It was decided to include all of Delaware's twenty-six school districts in the study. The data regularly collected by the Department of Public Instruction which were available for the study included:

1. September 1970 enrollment in day school programs during the regular school year for each major category and sub-category of program by school.

2. The number of teachers and non-teaching academic supportive staff members for each district by school.

3. The 1970-71 current operating expenses by category of expenditure for each school district.

The September enrollments were assumed to represent full-time equivalents with the exception of kindergarten enrollments and those for vocational-technical students in school districts in Kent and Sussex Counties where the full-time equivalent enrollment was assumed to be one-half the reported enrollment.

Since current operating expense data were not available by category or sub-category of program, it was necessary to devise methods for allocating current operating expenses to program levels. The first allocation distributed total current operating expenses to the elementary (K-6) and secondary (7-12) levels by computing the ratio of elementary to secondary teaching and non-teaching academic staff which was then used to allocate instructional costs. It was necessary to assume that all other categories of expenditure--including district administration, attendance and health services, transportation, operation of plant, maintenance of plant, fixed charges and food services--applied equally to each student regardless of level. This allocation resulted in an estimate of the cost per full-time equivalent student at both the elementary and secondary levels in each school district.

A second allocation was necessary to distribute the current operating expenses to each of the handicapped programs and to the regular program within the elementary and secondary grade levels. The relationship between the teacher/student ratio in a special program and the teacher/student ratio at the respective grade level was used as the basis for allocating instructional expenses exclusive of those attributable to non-teaching academic supportive staff which were assumed to apply equally to all students regardless of program within grade level. The aggregation of the allocated instructional expenses associated with the teaching staff, the residual instructional expenses associated with the non-teaching academic supportive staff and the base expenses exclusive of instructional expenses provided an estimate of the cost per full-time equivalent student for each of the handicapped programs and for the regular program at both the elementary and secondary grade levels. The

cost index and the cost differential between the regular program cost per student and the special program cost per student were then calculated.

Several cautions should be noted with regard to the method of allocation used in arriving at the cost differentials and cost indices. In the first place, the method of allocation that was used relies on the number of academic staff members rather than the current expenses for academic staff. Although salary data were made available for the 1970-71 academic year, these data could not be reconciled with the report of current operating expenses for that year. Furthermore, the expenses involved in the allocation process included expenses not directly associated with salaries--for example, textbooks, library books, teaching supplies, contractual services and other expenses--expenses which obviously would be distributed somewhat arbitrarily by using salaries as the basis for allocation. The method used assumes that all members of the teaching staff, whether in regular or special education programs, receive the same salary and thus is likely to understate the cost differentials slightly. Secondly, the allocation process assumed that many of the expenses--for example, those for transportation, food service, maintenance of plant, etc.--apply equally to students in both regular and special programs. In the absence of more detailed accounting records, no alternative assumption would seem to be justified but it should be noted that this assumption probably also serves to understate the cost differentials. Finally, the allocation process resulted in an <u>estimate</u> of the cost per student by category and sub-category of program, and a tenuous one at that, and does not represent an accurate accounting of the actual cost per student based on detailed program-by-program accounting records. With

the development of more detailed accounting systems a more accurate description of cost differentials will become possible.

In Table 1 are summarized the various programs provided by each school district in Delaware. No judgments were made by the researchers with regard to the relative quality of the various educational programs. The only measure of program output used in this study was the number of students actually involved in each program. One cannot assume that program quality is equal in each district and a range in expenditure per student in each program is to be expected. Consequently, the districts were coded to minimize the temptation to make unjustified comparisons.

The data presented in Table 1 show that at the elementary school level the most prevalent handicapped programs were those for educable mentally retarded students, students with learning disabilities, and students who are socially and emotionally maladjusted. At the secondary school level handicapped programs for educable mentally retarded students, socially and emotionally maladjusted students, and students with learning disabilities were again most prevalent--although they were offered in fewer districts than at the elementary level. Compensatory programs were provided in speech and hearing by 22 districts, in homebound and supportive instruction by 23 districts and 20 districts provided ESEA Title I programs. In addition, 11 districts provided a regular program for students who were enrolled in a vocational-technical program in either the Kent or Sussex County vocational-technical districts.

Regular Educational Programs

Data concerning the cost of the regular educational program in each of Delaware's 26 school districts are shown in Table 2. The cost per

TABLE 1

Summary of Regular and Special Education Programs in Delaware School Districts

PROGRAM / DISTRICT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	TOTAL
Elementary Grades																											
Handicapped Programs																											
Educable Mentally Retarded	X	X	X	X		X	X		X	X	X	X		X	X		X		X	X	X		X		X	X	19
Trainable Mentally Retarded	X								X				X				X						X				5
Orthopedically Handicapped							X				X		X				X										4
Blind																	X										1
Partially Sighted																	X										1
Hard of Hearing or Partially Deaf				X																							1
Socially & Emotionally Maladjusted	X	X		X	X		X				X	X	X	X	X		X		X		X		X		X		15
Learning Disabilities	X	X		X	X	X	X		X		X	X	X	X	X		X		X	X	X	X	X		X		19
Regular Program	X	X	X	X	X	X	X		X	X	X	X	X	X	X		X		X	X	X	X	X		X	X	22
Secondary Grades																											
Handicapped Programs																											
Educable Mentally Retarded	X	X	X	X		X	X		X	X	X	X		X	X		X			X	X		X		X	X	18
Trainable Mentally Retarded									X																		1
Orthopedically Handicapped							X				X		X				X										4
Blind																	X										1
Partially Sighted																	X										1
Hard of Hearing or Partially Deaf				X													X										2
Socially & Emotionally Maladjusted	X			X								X			X		X			X			X		X		8
Learning Disabilities	X					X	X						X	X							X		X			X	8
Regular Program	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X		X	X	23
Compensatory Programs																											
Speech and Hearing	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X		X	X	22
ESEA Title I	X	X	X	X	X	X	X	X	X	X	X			X	X		X		X	X	X	X	X			X	20
Homebound and Supportive	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X		X	X	23
Vocational-Technical Programs	X		X				X	X	X	X						X		X	X	X	X	X		X		X	14
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	TOTAL

TABLE 2

Cost Per Full-Time Equivalent Pupil for Regular Educational Programs in Delaware School Districts in 1970-71

District	Elementary	Secondary	Secondary/Elementary
A	$ 652	$ 762	1.17
B	875	937	1.07
C	781	868	1.11
D	777	874	1.12
E	723	867	1.20
F	710	808	1.14
G	780	850	1.09
H	--	865	--
I	714	888	1.24
J	658	738	1.12
K	760	825	1.09
L	1,023	1,256	1.23
M	916	981	1.07
N	702	812	1.16
O	827	902	1.09
P	--	--	--
Q	1,048	1,208	1.15
R	--	--	--
S	742	803	1.08
T	737	784	1.06
U	824	852	1.03
V	727	817	1.12
W	818	883	1.08
X	--	--	--
Y	817	939	1.15
Z	882	825	.94
High	Q	L	I
Low	A	J	Z
Mean	795 (N=22)	885 (N=23)	1.11

full-time equivalent elementary pupil in the 22 districts providing such programs ranged from a low of $652 per pupil in District A to a high of $1,048 per pupil in District Q. The average expenditure per regular pupil in the 22 districts was $795. Expenditure per full-time equivalent secondary pupil ranged from a low of $738 in District J to a high of $1,256 in District L. The average expenditure per secondary school pupil in the 23 districts which provided regular secondary school programs was $885.

The ratio between expenditure per pupil in the regular secondary school program and expenditure per pupil in the regular elementary school program ranged from a low of .94 in District Z to a high of 1.24 in District I. The average ratio of secondary to elementary costs per pupil in the 22 districts where such a comparison was possible was 1.11. This means that, on the average, these 22 districts were spending $111 per secondary pupil for each $100 they expended per elementary pupil.

Pre-School Programs

It was not possible to determine the relative cost of kindergarten programs. Twenty districts reported a total of 3,865 full-time equivalent pupils enrolled in kindergarten programs, but it was not possible to disaggregate the fiscal data at the elementary school level. Thus, it was impossible to sort out the cost of the kindergarten program from the total cost of the program for children in grades 1-6. Data from other studies indicate that kindergarten programs are somewhat more costly than regular elementary school programs on a full-time equivalent pupil basis. The exact variation depends primarily upon the kindergarten pupil/teacher ratio compared with the pupil/teacher ratio in the elementary

grades. Data from other states indicate that kindergarten programs are from 5 to 40 percent more costly than regular programs in grades 1-6 with an excess cost of 25 percent representing a reasonable average.

Educational Programs for Handicapped Pupils

School districts in Delaware offer a variety of programs for handicapped pupils. Special schools are provided for some types of handicapped pupils and districts also provide programs through special classes or supporting services in regular schools. Data concerning the cost of educational programs for handicapped pupils will be reported separately for elementary and secondary programs.

Programs for the Educable Mentally Retarded

Table 3 displays the cost associated with special programs for educable mentally retarded elementary school pupils in the 19 school districts which provided such programs. Expenditure per pupil in these special programs ranged from a low of $873 per pupil in District W to a high of $1,747 per pupil in District L. The associated cost differentials were $724 per pupil in District L and $55 per pupil in District W. District L had the highest cost index, 1.71; District W had the lowest cost index, 1.07. The average cost index for the 19 districts was 1.49. Thus, on the average, for each $100 Delaware school districts were spending for elementary pupils in the regular program, $149 was being expended for elementary pupils in special programs for the educable mentally retarded.

Data concerning the cost of special educational programs for educable mentally retarded pupils in the secondary schools are presented in Table 4. The cost of these special programs ranged from a low of $854

TABLE 3

Cost Per Full-Time Equivalent Elementary Pupil in Special Educational Programs for the Educable Mentally Retarded in Delaware School Districts, 1970-71

District	Exceptional Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$ 973	$ 652	$321	1.49
B	1,288	875	413	1.47
C	1,086	781	305	1.39
D	1,128	777	351	1.45
F	1,055	710	345	1.49
G	1,060	780	280	1.36
I	1,190	714	476	1.67
J	1,037	658	379	1.58
K	1,113	760	353	1.46
L	1,747	1,023	724	1.71
N	1,020	702	318	1.45
O	1,279	827	452	1.55
Q	1,687	1,048	639	1.61
S	1,026	742	284	1.38
T	1,009	737	272	1.37
U	1,490	824	666	1.81
W	873	818	55	1.07
Y	1,215	817	398	1.49
Z	1,238	882	356	1.40
High	L	L	L	L
Low	W	A	W	W
Mean (N=19)	1,185	796	389	1.49

TABLE 4

Cost Per Full-Time Equivalent Secondary Pupil in Special Educational Programs for the Educable Mentally Retarded in Delaware School Districts, 1970-71

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$ 854	$ 762	$ 92	1.12
B	1,252	937	315	1.34
C	1,173	868	305	1.35
D	1,023	874	149	1.17
F	1,291	809	482	1.60
G	1,290	850	440	1.52
I	1,209	888	321	1.36
J	886	738	148	1.20
K	1,067	825	242	1.29
L	1,814	1,256	558	1.44
N	1,196	812	384	1.47
O	1,331	902	429	1.48
Q	1,427	1,208	219	1.18
T	1,070	784	286	1.36
U	1,019	852	167	1.20
W	1,530	883	647	1.73
Y	1,161	939	222	1.24
Z	975	825	150	1.18
High	L	L	W	W
Low	A	J	A	A
Mean (N=18)	1,198	890	309	1.35

per pupil in District A to a high of $1,814 per pupil in District L. Cost differentials ranged from a low of $92 per pupil in District A to a high of $647 per pupil in District W. The corresponding cost indices ranged from a low of 1.12 in District A to a high of 1.73 in District W. District A obviously was spending only slightly more to educate pupils in its special program for the educable mentally retarded than it was spending on students in its regular program, while District W was spending 73 percent more on the education of each educable mentally retarded student than was being spent for each student in its regular program.

The average cost of the special programs for educable mentally retarded secondary school students in all 18 districts which provided such programs was $1,198. The average cost differential in comparison with the regular program was $309 and the average cost index was 1.35. Thus, on the average, Delaware school districts were spending $135 for each EMR student in secondary schools compared with $100 for each student in the regular secondary school program.

Programs for the Trainable Mentally Retarded

In Table 5 are shown the costs associated with special programs for trainable mentally retarded pupils. These programs were provided in special schools for trainable mentally retarded children; three located in New Castle County, one in Kent County, and one in Sussex County. The cost per pupil in these five special programs ranged from a low of $1,078 in District A to a high of $2,008 in District Q. Cost differentials ranged from a low of $365 in District M to a high of $960 in District Q. Cost indices ranged from a low of 1.40 in District M to a high of 1.92 in District Q.

TABLE 5

Cost Per Full-Time Equivalent Elementary Pupil in Special Educational Programs for the Trainable Mentally Retarded in Delaware School Districts, 1970-71

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$1,078	$ 652	$426	1.65
I	1,092	714	378	1.53
M	1,281	916	365	1.40
Q	2,008	1,048	960	1.92
W	1,482	818	664	1.81
Mean (N=5)	1,388	830	559	1.67

The average expenditure per pupil for the five programs was $1,388 compared to an average regular program cost per pupil of $830. The average cost differential was $559 per pupil and the average cost index was 1.67. It will be noted that the cost of educating trainable mentally retarded children is somewhat higher than the cost of programs for the educable mentally retarded. Data from other states suggest this is true whether or not such children are educated in special schools or in special classrooms. In Delaware, the cost of programs for educable mentally retarded children is about 67 percent higher than the cost of educating children in the regular elementary school program.

Only one secondary school program for trainable mentally retarded students was reported. This program was conducted in a special school for the trainable mentally retarded. The cost per pupil for the program was $1,101; the cost of the regular secondary school program was $888. The cost differential between the regular and the special programs was $213 per pupil, yielding a cost index of 1.24.

Programs for the Orthopedically Handicapped

Special programs for orthopedically handicapped elementary school children were provided in four special schools during 1970-71. Data concerning the cost of these programs are shown in Table 6. The highest cost program, $2,151 per pupil, was provided in District Q; the lowest cost program, $1,163 per pupil, was provided in District M. Cost differentials ranged from $247 per pupil to $1,103 per pupil. The cost indices ranged from a low of 1.27 in District M to a high of 2.05 in District Q. The average cost per pupil in the four special schools was $1,540 per year. This yielded an average cost index of 1.76. The average cost index for

TABLE 6

Cost Per Full-Time Equivalent Elementary Pupil in Special Educational Programs for the Orthopedically Handicapped in Delaware, 1970-71

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
G	$1,404	$ 780	$ 624	1.80
K	1,443	760	683	1.90
M	1,163	916	247	1.27
Q	2,151	1,048	1,103	2.05
Mean (N=4)	1,540	876	664	1.76

these programs is somewhat lower than the average cost index identified in the National Educational Finance Project research. This lower cost may reflect economies of scale in the special schools for orthopedically handicapped children.

Four school districts provided special educational programs for orthopedically handicapped secondary school students. Data concerning the cost of these programs is reported in Table 7. The highest cost program was provided in District G, $1,394 per pupil, and the lowest cost program was provided in District M, $1,116 per pupil. Cost differentials ranged from a low of no difference in District Q to a high of $544 per pupil in District G. The corresponding cost indices were 1.0 in District Q and 1.64 in District G. The average cost of the special programs in the four districts was $1,245 compared with an average cost for regular programs of $966. The corresponding average cost differential was $279, and the average cost index of 1.29. These data lead one to suspect that the nature of the special educational program in District G is quite different than the nature of the special educational program in District Q. Unfortunately, the data available did not permit an analysis of the differences between the programs in these two districts.

Programs for Blind and Partially Sighted Pupils

One school district, District Q, provided a special program for blind and partially sighted elementary school pupils. It was not possible to distinguish expenditures for blind pupils from those for partially sighted pupils. The average cost per pupil in this program was $1,921 compared with an average cost of $1,048 for pupils in the regular program. The cost differential between these two programs was $873 per pupil, yielding

TABLE 7

Cost Per Full-Time Equivalent Secondary Pupil in Special Educational Programs for the Orthopedically Handicapped in Delaware Schools, 1970-71

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
G	$1,394	$ 850	$544	1.64
K	1,263	825	438	1.53
M	1,116	981	135	1.14
Q	1,208	1,208	0	1.00
Mean (N=4)	1,245	966	279	1.29

a cost index of 1.83. This cost index is somewhat lower than the cost index reported for pupils in programs for the blind or partially sighted in the National Educational Finance Project research.

District Q was also the only district that provided a special educational program for blind or partially sighted secondary school pupils. The cost per pupil in this special program was $2,995 compared with a cost of $1,208 per pupil in the regular program. The corresponding cost differential, $1,787, was associated with a cost index of 2.48. Data concerning expenditure for blind students in this program could not be disaggregated from the data concerning expenditures for partially sighted pupils. Consequently, only one cost can be reported.

Programs for Pupils with Impaired Hearing

District D was the only district to report data on the cost of educating elementary school pupils in special programs for the hard of hearing. The cost per pupil in this program was $2,359 compared with a cost of $777 per pupil in the regular program. the cost differential was $1,582 and the cost index for the program was 3.03. Thus, the cost per pupil in this program was over 300 percent greater than the cost per pupil in the regular elementary school program.

Two districts, D and Q, provided special educational programs for secondary school pupils with impaired hearing. The cost of this program in District D was $2,411 per pupil compared with a regular program cost of $874 per pupil. This yielded a cost differential of $1,537 per pupil and a cost index of 2.76. The cost per pupil for the program in District Q was $4,016 compared with a cost per pupil in the regular program of $1,208. The difference in cost between the two programs was $2,808 per pupil and the cost index was 3.33.

The average cost of the two programs was $3,213 per pupil; the average cost differential was $2,172 per pupil and the average cost index for special educational programs for secondary school pupils with impaired hearing was 3.05.

Programs for Socially and Emotionally Maladjusted Pupils

Fifteen school districts provided special programs for socially and/or emotionally maladjusted elementary school pupils. Data concerning these programs are provided in Table 8. The highest cost program ($2,150 per pupil) was provided in District N and the lowest cost program ($1,023 per pupil) was provided in District L. Cost indices ranged from a high of 3.06 in District N to a low of 1.00 in District L. Thus, the cost of the special program in District L was exactly the same as the cost of the program for regular pupils in that district while that in District N was over three times as costly as the program for regular pupils. This wide range in expenditure reflects the widely varying needs of socially and emotionally maladjusted pupils. Pupils who are seriously disturbed require a very small class size and constant observation; those who are only mildly disturbed often can function in a regular school program with some supportive services at appropriate times. The average cost per pupil for all fifteen special programs was $1,576 and the average cost index for the fifteen special programs was 1.92. This average cost index is somewhat lower than is typically found associated with special programs for socially and emotionally maladjusted pupils

Eight school districts provided special educational programs for socially and/or emotionally maladjusted secondary school pupils. Data concerning the cost per pupil in these programs are presented in Table 9.

TABLE 8

Cost Per Full-Time Equivalent Elementary Pupil in Special Educational Programs for the Socially and Emotionally Maladjusted in Delaware, 1970-71

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$1,366	$ 652	$ 714	2.10
B	1,230	875	355	1.41
D	1,334	777	557	1.72
E	1,447	723	724	2.00
G	1,607	780	827	2.06
K	1,707	760	947	2.25
L	1,023	1,023	0	1.00
M	1,595	916	679	1.74
N	2,150	702	1,448	3.06
O	1,621	827	794	1.96
Q	1,447	1,048	399	1.38
S	1,765	742	1,023	2.38
U	1,437	824	613	1.74
W	2,019	818	1,201	2.47
Y	1,899	817	1,082	2.32
High	N	Q	N	N
Low	L	A	L	L
Mean (N=15)	1,576	819	758	1.92

TABLE 9

Cost Per Full-Time Equivalent Secondary Pupil in Special Educational Programs for the Socially and Emotionally Maladjusted in Delaware Schools, 1970-71

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$1,322	$ 762	$ 560	1.73
D	1,525	874	651	1.74
L	3,333	1,256	2,077	2.65
O	1,672	902	770	1.85
Q	1,371	1,208	163	1.13
T	1,974	784	1,190	2.52
W	2,040	883	1,157	2.31
Y	1,594	939	655	1.70
High	L	L	L	L
Low	A	A	Q	Q
Mean (N=8)	1,854	951	903	1.95

The highest cost program was that provided in District L, $3,333 per pupil and the lowest cost program was that provided in District A, $1,322 per pupil. The highest cost differential was in District L, $2,077, and the lowest cost differential was in District Q, $163. District L had the highest cost index, 2.65, and District Q the lowest cost index, 1.13. the average cost of the program in the eight school districts was $1,854 per pupil compared with an average regular program cost of $951 per pupil. The average cost index for all eight programs was 1.95. Again, it seems apparent that the program provided in District Q differs rather markedly from the program provided in District L. Unfortunately, however, the data did not permit a determination of the reasons for the great variance in the cost between the programs provided in these two school districts.

Programs for Pupils with Learning Disabilities

In Table 10 data are provided concerning the cost of special educational programs for elementary school pupils with learning disabilities. The title "learning disabilities" includes a variety of educational handicaps. The cost of such programs can be expected to vary quite widely depending upon the nature and severity of the learning disabilities being treated in the program. Nineteen school districts provided such programs. The cost of these programs ranged from a low of $1,267 per pupil in District V to a high of $2,410 per pupil in District I. Cost differentials ranged from a low of $540 per pupil in District V to a high of $1,696 per pupil in District I. The lowest cost index was in District L (1.58) and the highest cost index program was in District I (3.38). For all 19 programs, the average cost per pupil was $1,827 and the average cost index for pupils with learning disabilities was 2.29.

TABLE 10

Cost Per Full-Time Equivalent Elementary Pupil in Special Educational Programs for Pupils with Learning Disabilities in Delaware, 1970-71

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$1,385	$ 652	$ 733	2.12
B	1,832	875	957	2.09
D	1,439	777	662	1.85
E	1,744	723	1,021	2.41
F	1,955	710	1,245	2.75
G	1,579	780	799	2.02
I	2,410	714	1,696	3.38
K	1,729	760	969	2.27
L	1,616	1,023	593	1.58
M	2,061	916	1,145	2.25
N	1,679	702	977	2.39
O	2,053	827	1,226	2.48
Q	1,705	1,048	657	1.63
S	1,640	742	898	2.21
T	2,004	737	1,267	2.72
U	2,171	824	1,347	2.63
V	1,267	727	540	1.74
W	2,308	818	1,490	2.82
Y	2,132	817	1,315	2.61
High	I	Q	I	I
Low	V	A	V	L
Mean (N=19)	1,827	799	1,028	2.29

Data concerning the cost of special educational programs for secondary school pupils with learning disabilities are provided in Table 11. Eight school districts provided such programs for secondary school pupils during the 1970-71 school year. The cost of these programs ranged from a low of $1,625 per pupil in District Z to a high of $2,438 per pupil in District G. Cost differentials ranged from a low of $789 per pupil in District M to a high of $1,588 per pupil in District G. The cost indices ranged from a low of 1.80 in District M to a high of 2.87 in District G. The average cost of the special programs in all eight districts was $1,891 per pupil compared with a regular program average cost of $847 per pupil. The resulting cost differential was $1,044 and the average cost index was 2.24.

Summary

In Table 12 are presented data concerning the cost per full-time equivalent pupil in all special educational programs for handicapped elementary school pupils. These data provide an estimate of the relative cost of educating all handicapped elementary pupils in a school district relative to the cost of educating pupils in the regular elementary program. The cost of special elementary school programs for handicapped pupils ranged from a low of $1,037 in District J to a high of $1,751 in District Q. Cost differentials for these programs ranged from a low of $305 in District C to a high of $837 in District D. The high and low cost differentials were 1.39 and 2.08, respectively. The average cost of all special educational programs for handicapped elementary pupils in the 22 districts which provided such programs was $1,358 per pupil compared with a regular program cost per pupil of $795. The average cost differential was $563 per pupil and the average cost index was 1.71.

TABLE 11

Cost Per Full-Time Equivalent Secondary Pupil in Special Educational Programs for Pupils with Learning Disabilities in Delaware Schools, 1970-71

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	$1,773	$762	$1,011	2.33
F	2,053	808	1,245	2.54
G	2,438	850	1,588	2.87
M	1,770	981	789	1.80
N	1,704	812	892	2.10
U	1,985	852	1,133	2.33
W	1,780	883	897	2.02
Z	1,625	825	800	1.97
High	G	M	G	G
Low	Z	A	M	M
Mean (N=8)	1,891	847	1,044	2.24

TABLE 12

Cost Per Full-Time Equivalent Elementary Pupil for All Special Educational Programs for the Handicapped in Delaware School Districts, 1970-71

District	Number of Programs	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	4	$1,151	$ 652	$499	1.77
B	3	1,308	875	433	1.49
C	1	1,086	781	305	1.39
D	4	1,614	777	837	2.08
E	2	1,496	723	773	2.07
F	2	1,146	710	436	1.61
G	4	1,277	780	497	1.64
I	3	1,226	714	512	1.72
J	1	1,037	658	379	1.58
K	4	1,362	760	602	1.79
L	3	1,520	1,023	497	1.49
M	4	1,413	916	497	1.54
N	3	1,175	702	473	1.67
O	3	1,597	827	770	1.93
Q	7	1,751	1,048	703	1.67
S	3	1,274	742	532	1.72
T	2	1,255	737	518	1.70
U	3	1,652	824	828	2.00
V	1	1,267	727	540	1.74
W	4	1,619	818	801	1.98
Y	3	1,404	817	587	1.72
Z	1	1,238	882	356	1.40
High		Q	Q	D	D
Low		J	A	C	C
Mean (N=22)		1,358	795	563	1.71

In Table 13 data concerning the cost for full-time equivalent secondary school pupils in all special educational programs for the handicapped are summarized. The average cost of all special programs in the 19 districts which provided such programs ranged from a low of $886 per pupil in District J to a high of $2,465 per pupil in District L. Cost differentials ranged from a low of $148 per pupil in District J to a high of $1,209 per pupil in District L. District J also had the lowest cost index, 1.20, and District W had the highest cost index, 2.00. The average cost per pupil in all special educational programs in secondary schools in the 19 districts was $1,353 per pupil compared with an average regular program cost of $896 per pupil. The resulting cost differential was $456 per pupil and the average cost index was 1.51.

Vocational-Technical Programs

Programs in vocational and/or technical education were provided in three county vocational-technical schools in Delaware in 1970-71. Data concerning the cost of these three programs are presented in Table 14. Two methods were employed to compute special program costs, since pupils in vocational-technical programs spent a portion of their school day, typically one-half, in a regular secondary school program. Method 1 utilizes the cost per full-time equivalent student in the vocational-technical school program; Method 2 combines estimates of the relative cost of the portion of the regular program taken by vocational-technical students as well as the cost of the vocational-technical portion of the total program. The two methods affect only the computed cost of the special program, not that of the regular program. However, since cost differentials and cost indices reflect differences between the cost

TABLE 13

Cost Per Full-Time Equivalent Secondary Pupil in All Special Educational Programs for the Handicapped in Delaware Schools, 1970-71

District	Number of Programs	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
A	3	$1,108	$ 762	$ 346	1.45
B	1	1,252	937	315	1.34
C	1	1,173	868	305	1.35
D	3	1,459	874	585	1.67
F	2	1,373	808	565	1.70
G	3	1,419	850	569	1.67
I	2	1,154	888	266	1.30
J	1	886	738	148	1.20
K	2	1,097	825	272	1.33
L	2	2,465	1,256	1,209	1.96
M	2	1,499	981	518	1.53
N	2	1,256	812	444	1.55
O	2	1,564	902	662	1.73
Q	6	1,467	1,208	259	1.21
T	2	1,070	825	245	1.30
U	2	1,355	852	503	1.59
W	3	1,765	883	882	2.00
Y	2	1,269	939	330	1.35
Z	2	1,070	825	245	1.30
High		L	L	L	W
Low		J	A	J	J
Mean (N=19)		1,353	896	456	1.51

TABLE 14

Cost Per Full-Time Equivalent Pupil in Vocational-Technical Programs in Three County Vocational-Technical Schools in Delaware, 1970-71

Method I: Cost Per FTE Student in Vocational School

District	Special Program Cost Per Pupil	Regular Program Cost Per Pupil	Cost Differential	Cost Index
P	$1,501	$949	$552	1.58
R	1,344	813	531	1.65
X	1,291	824	467	1.57
Mean	1,379	862	517	1.60

Method II: Cost Per FTE Student in Vocational Programs

P	$1,501	$949	$552	1.58
R	1,084	813	271	1.33
X	1,053	824	229	1.28
Mean	1,213	862	351	1.41

of regular and special programs, they also are affected by the computational method employed.

Using Method I, the cost of the special vocational-technical programs ranged from a low of $1,291 per pupil in District X to a high of $1,501 per pupil in District P. Regular program costs ranged from a low of $813 in District R to a high of $949 in District P. The cost differentials ranged from a low of $467 per pupil in District X to a high of $552 per pupil in District P. Cost indices ranged from a low of 1.57 to a high of 1.65. For the three districts, the average cost of the special program was $1,379 per pupil and the average cost index was 1.60.

Using Method 2, cost differentials ranged from a low of $229 per pupil in District X to a high of $552 per pupil in District P and cost indices ranged from a low of 1.28 in District X to a high of 1.58 in District P. For the three districts, the average cost of the special program was $1,213 per pupil compared with an average regular program cost of $862 per pupil. The average cost index was 1.41 when computed under Method 2 compared with 1.60 computed under Method 1.

Compensatory Education Programs

It is extremely difficult to develop meaningful cost indices for compensatory education programs since the nature of such programs differs widely from one district to another--and even varies widely between schools within a district. Data were not readily available with regard to expenditures for specific types of compensatory education programs. However, in Table 15 data concerning the expenditure per pupil in programs of compensatory education funded under Title I of the Elementary and Secondary Education Act are presented. The average expenditure per pupil

TABLE 15

Expenditure Per Pupil in Programs of Compensatory Education (ESEA Title I) in Delaware Schools, 1970-71

District	Expenditure Per Pupil in ESEA Title I Programs
A	$230
B	297
C	286
D	251
E	270
F	244
G	511
H	318
I	592
J	248
K	149
N	173
O	292
Q	267
S	322
T	220
U	335
V	324
W	103
Z	173
Mean (N=20)	280

for compensatory education programs in the 20 districts which provided such programs was $280. Expenditures ranged from a low of $103 per pupil in District W to a high of $592 per pupil in District I. Experience gained over the past several years indicates that special programs can be utilized to help pupils who are educationally disadvantaged by social or economic situations outside the school. It is also apparent that the nature of such programs will need to vary greatly depending upon the individual problems of pupils. Consequently, a more precise definition of categories within the broad field of compensatory education is badly needed. From the data available, it was not possible to generalize with regard to the cost, effectiveness, or appropriate cost indices which should be used in computing fiscal entitlements under programs of compensatory education.

Homebound and Supportive Educational Services

Data concerning the average cost of providing homebound and/or supportive educational services for pupils who are temporarily disabled and thus unable to attend a regular school program are provided in Table 16. Such services typically are provided to pupils who are hospitalized as a result of injury or illness or who are confined to their home for similar reasons. The number of pupils who require such services varies considerably from year to year and the duration of such services also is quite variable. Consequently, it is neither appropriate nor meaningful to develop cost indices for this program. It is useful in fiscal planning, however, to have knowledge of the average cost per pupil of such services and the range in costs which might reasonably be expected in any given year. These data, combined with data concerning the number of pupils who receive such service in a given year, can assist in fiscal planning to insure that adequate

TABLE 16

Expenditure Per Pupil for
Homebound and Supportive Educational Services
in Delaware Schools, 1970-71

District	Expenditure Per Pupil
A	$469
B	624
C	522
D	352
E	336
F	415
G	269
H	725
I	641
J	324
K	500
L	299
M	710
N	602
O	529
Q	486
S	133
T	321
U	231
V	851
W	239
Y	448
Z	825
Mean (N=23)	472

support for such services is available. The average expenditure for homebound and supportive educational services in the 23 Delaware school districts which provided such services during the 1970-71 school year was $472 per pupil. Expenditure per pupil for such services ranged from a low of $133 per pupil in District S to a high of $851 per pupil in District V. A total of 318 pupils received homebound and supportive services during the 1970-71 school year.

A Summary of Cost Indices

In Table 17 are summarized the average cost indices for educational programs provided in Delaware's public schools during the 1970-71 school year. No cost indices are reported for either compensatory or homebound/hospital programs, since the data needed to complete indices for these special programs were not available. It should be noted that all cost indices for special elementary school programs were computed relative to the rest of the regular elementary school program and that all cost indices for special secondary school programs were computed relative to the cost of the regular secondary school program. Programs for deaf or partially deaf pupils were the most costly. Programs for pupils with learning disabilities and for blind or partially sighted pupils also were among the most costly. Programs for mentally retarded and orthopedically handicapped pupils were among the least costly.

Distribution of Pupils in Regular and Special Programs

The distribution of pupils among regular and special programs, i.e., the incidence of need for special educational programming is a matter of great importance, for it will effect directly the total amount of money required to provide adequate educational programs for all pupils in the

TABLE 17

A Summary of Average Educational Program
Cost Indices in Delaware Public Schools, 1970-71

Programs	Elementary	Secondary*
Regular Programs	1.00	1.00**
Handicapped Programs		
Educable Mentally Retarded	1.49	1.35
Trainable Mentally Retarded	1.67	1.24
Orthopedically Handicapped	1.76	1.29
Blind or Partially Sighted	1.83	2.48
Deaf or Partially Deaf	3.03	3.05
Socially & Emotionally Maladjusted	1.92	1.95
Learning Disabilities	2.29	2.24
All Programs for the Handicapped	1.71	1.51
Vocational-Technical Programs	--	1.60

*All secondary cost indices are cost relative to the cost of the regular secondary school program.

**The secondary regular program cost is 1.11 times the elementary regular program cost.

state. Table 18 provides a summary of the distribution of elementary and secondary school pupils in the various educational programs provided by Delaware school districts in 1970-71. Enrollments are reported as full-time equivalent pupils and the percentage column indicates the percentage of elementary and secondary pupils in each program category.

Full-time equivalent enrollment in all elementary school programs was 69,725 pupils. Of this total 66,624 (95.55 percent) were enrolled in regular programs and 3,101 (4.45 percent) were enrolled in special programs for the handicapped. Within the handicapped program category, pupils in programs for the educable mentally retarded comprised by far the largest group and 1.85 percent of all elementary pupils were participating in these programs. Programs for trainable mentally retarded pupils, for pupils with learning disabilities and for socially and emotionally maladjusted pupils accounted for .76 percent, .78 percent and .69 percent of all elementary pupils, respectively. Pupils in special programs for the blind or partially sighted were least numerous.

Total full-time equivalent enrollment in all secondary school programs was 59,155 of which 54,603 (92.30 percent) were in regular secondary school programs, 3,036 (5.13 percent) were in vocational-technical programs, and 1,516 (2.56 percent) were in special programs for the handicapped. Programs for educable mentally retarded pupils accounted for 1,014 pupils (1.71 percent) and programs for the socially and emotionally maladjusted accounted for 245 pupils (.41 percent).

Total enrollment in all elementary and secondary school programs totaled 128,880 pupils. Of the total, 121,227 (94.06 percent) were in regular programs and 4,617 pupils (3.58 percent) were in special programs

TABLE 18

Percentage Distribution of Full-Time Equivalent Elementary and Secondary Pupils by Educational Program in the State of Delaware, 1970-71

Program	Elementary Number	Elementary Percent	Secondary Number	Secondary Percent	Total Number	Total Percent
Handicapped Programs	3,101	4.45	1,516	2.56	4,617	3.58
Educable Mentally Retarded	1,287	1.85	1,014	1.71	2,301	1.79
Trainable Mentally Retarded	527	0.76	64	0.11	591	0.46
Orthopedically Handicapped	160	0.23	33	0.06	193	0.15
Blind	5	0.01	3	0.00	8	0.01
Partially Sighted	6	0.01	4	0.00	10	0.01
Hard of Hearing or Partially Deaf	90	0.13	33	0.06	123	0.09
Socially & Emotionally Maladjusted	482	0.69	245	0.41	727	0.56
Learning Disabilities	544	0.78	120	0.20	664	0.51
Compensatory Programs*					(11,022)	(8.55)
Speech and Hearing					(3,813)	(2.96)
ESEA Title I					(6,891)	(5.35)
Homebound and Supportive					(318)	(0.25)
Vocational-Technical Programs			3,036	5.13	3,036	2.36
Regular Program	66,624	95.55	54,603	92.30	121,227	94.06
TOTAL	69,725	100.00	59,155	100.00	128,880	100.00

*Compensatory Program enrollments are not assigned to grade level and are included in the full-time equivalent enrollments reported for other programs. They are therefore not additive in the total.

for the handicapped. The largest special program was that for educable mentally retarded pupils with 2,301 (1.79 percent) enrolled.

A total of 11,022 pupils (8.55 percent) were involved in a variety of compensatory programs at either the elementary or secondary level. (These pupils were also enrolled in other programs and were not included in determining the total enrollment.) Pro-rams for pupils with speech and hearing problems included 6,891 pupils, and 318 pupils were included in homebound and supportive programs.

In addition to the pupils who actually were enrolled in programs for the handicapped, a total of 2,250 eligible children were not enrolled in special programs as of October, 1971. A summary of the eligible children who were deprived of special educational opportunities, and the reasons for their non-placement, is provided in Table 19. A total of 729 educable mentally retarded pupils were not in special programs--primarily because of lack of classroom space or because of legal limiations on the number of classroom units available. A large number of socially and emotionally maladjusted pupils and pupils with learning disabilities also were not placed in special programs because of legal limitations on the number of support units. If the number of pupils in each handicapped program are added to the number of eligible children in each category who were not being served in October, 1971, estimates of the incidence of handicapped pupils can be obtained and compared with NEFP estimates:

TABLE 19

Eligible Children Deprived of Special Education Opportunities in Delaware, October, 1971*

AREA OF EXCEPTIONALITY

Reasons for Non-Placement	Educable Mentally Retarded	Trainable Mentally Retarded	Orthopedically Handicapped	Blind	Partially Sighted	Hearing Impaired	Socially & Emotionally Maladjusted	Learning Disabilities	Other	Tota
Legal limitations on units available	115	--	--	--	2	--	401	589	12	1,1
Classroom space not available	462	4	1	1	4	2	97	72	13	6
Qualifying data incomplete	66	8	--	--	--	--	65	54	--	1
Parent resistance	19	--	1	--	--	1	10	6	--	
Certified teacher not available	--	--	--	--	--	--	22	28	--	
Lack of a major fraction for a unit	40	--	9	3	2	2	65	15	--	1
Placement in progress	--	--	--	--	--	--	3	--	1	
Teacher objection	1	1	--	--	--	--	1	--	--	
Other	26	1	1	--	--	15	9	--	--	
TOTAL	729	14	12	4	8	20	673	764	26	2,2

*Data obtained from Delaware State Department of Education

	Delaware	NEFP
Educable Mentally Retarded	2.35%	1.30%
Trainable Mentally Retarded	.47	.24
Orthopedically Handicapped	.16	.21
Blind and Partially Sighted	.02	.05
Hearing Impaired	.11	.10
Socially & Emotionally Maladjusted	1.10	2.00
Learning Disabilities	1.11	1.12
Speech Handicaps	2.96	3.60
TOTAL	8.28%	8.62%

The Application of Cost Indices

Considerable misunderstanding exists with regard to the application of cost indices in planning for the financing of educational programs. Cost indices are most appropriately used for state-wide planning purposes. The availability of accurate cost indices for the state as a whole should permit more accurate estimates of the amount of revenue needed to provide adequately for the unique educational needs of all pupils. It must be emphasized, however, that an average is just that. Approximately one-half of the school districts in the state will be spending more than the state-wide average and the remaining one-half will be spending less. Using the average cost index for all educational programs state-wide as a basis for allocating funds to individual districts will not necessarily provide adequately for the specific educational needs of pupils in those districts. Even using the average cost index for a particular educational program state-wide as a basis for allocating funds to individual districts will not necessarily provide adequately for the specific educational needs of pupils in those districts. Even using the average cost index for a particular educational program state-wide as a basis for allocating funds to individual districts confronts the same problem.

A second limitation of cost indices, and especially of the cost indices developed in this study, is that they may not differentiate between various types of delivery systems. The magnitude of the differentials in educational cost are closely linked to the type of delivery system used in providing the various educational programs--for example, a residential school, a special classroom, or a regular classroom in combination with a resource room. It was noted that large differences existed from one district to another in the cost of providing a special educational program for pupils with a specific handicapping condition. Unfortunately, the data did not enable us to identify specific sources of cost variation or to identify the type of program delivery system being used in each district except where special schools were utilized.

A third limitation of cost indices lies in the fact that they reflect current educational practice. The cost indices developed in this study in no way reflect the efficacy or efficiency of the educational programs upon which the cost indices were based. Cost indices typically reflect what is currently being done rather than what could be or what should be done in the way of educational programming.

A fourth limitation is closely related to the third. Cost indices show the relative cost of educating pupils in special programs compared with the cost of educating pupils in regular programs. They provide no information as to how wisely and how efficiently funds are being expended for either regular or special educational programs. A particular special education program may be offered to equal numbers of students, provide the same educational services and cost the same amount per pupil in two school districts where the regular or base educational programs differ in efficiency and effectiveness. As a result, the cost indices for the

special educational program may vary widely between the two districts. This points to the need for a well developed, carefully monitored evaluation of all educational programs based upon the desired outcomes if cost indices are to be interpreted properly.

Finally, it should be noted that, for a variety of reasons, costs will differ between districts for identical programs. For example, in some districts, the cost of transporting pupils involved in special programs will be much greater than in other districts. A very important factor in determining the relative cost of educational programs is the pupil/teacher ratio. Some districts will have too few pupils to operate a program at maximum efficiency, but pupils who live in such districts certainly should not be denied access to the educational programs they need simply because there are not enough of them to operate a class at maximum efficiency. Differences in salaries and in the cost of educational supplies and materials will be found between districts and these differences also will be reflected in the educational program costs.

While educational cost indices and cost differentials provide a valuable planning tool, we wish to point out their limitations and to emphasize the importance of securing the most detailed information concerning program inputs and their relationship to program effectiveness and efficiency in order that planning decisions will be based on a full appreciation of the implications of the supporting evidence.